

Fabrication of chemiresistive gas sensor by using ligand conjugation Molybdenum Disulfides (MoS₂) for lung cancer diagnosis

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Molybdenum disulfide (MoS₂) has been favorably developed as gas sensor due to their high surface-to-volume ratio and excellent charge transport property, due to its superior properties as gas sensor as well as photodetector. According to this insight, we developed the MoS₂ based chemiresistive gas sensor by forming the bulk film type of MoS₂ layers. Especially, we conjugated thiolated ligands with the defects of sulfur vacancies on the MoS₂ layers which were induced during exfoliation process that resulted in functionalized MoS₂ sensing channels. The pristine and ligands conjugated MoS₂ films showed unique sensing properties for representative VOCs (volatile organic compounds) which might lead to valuable and practical application in the breath analysis for lung cancer diagnosis.